

BOOK REVIEW

JAMIESON, B. G. M. 1987. *The Ultrastructure and Phylogeny of Insect Spermatozoa*. Cambridge University Press, Cambridge. xv + 320 pp., 159 figs., author and subject indices. 30 pounds, U. K.

Most zoologists probably recall animal spermatozoa as resembling the miniature tadpoles figured in many introductory textbooks of biology or zoology (our own having a ghostly little bloke squeezing his knees inside). But, as emphasized by B. A. Afzelius in the foreword to this book, and as vividly illustrated on its pages, these cells are as diverse as the male animals from which they come. This comprehensive new book rigorously surveys the known ultrastructure of this diversity within a cladistic framework for members of the phylum 'Uniramia' (Onychophora, Myriapoda, Hexapoda) of Tiesgs, Manton and Anderson but with particular emphasis on the sperm of insects.

The book is dedicated to Baccio Baccetti of the University of Siena in Italy, who, with his students and colleagues, has probably described the ultrastructure, physiology and behaviour of the sperm of more insect species than have all other workers combined. He, too, has written extensively about the phylogenetic significance of his findings, but not within a cladistic framework, and with little regard for previous phylogenies reconstructed on the basis of comparative morphology and life style.

Jamieson believes that information about spermatozoa can act as an "independent arbiter" for resolving contentious problems of relationship. He attempts to prove this by reviewing knowledge of hexapod sperm structure for known members of each order and by examining congruence between his cladograms, based on analysis of these character sequences, and Niels Kristensen's recent cladogram of hexapod relationships (1981-Phylogeny of Insect Orders. *Ann. Rev. Ent.* 26: 135-157) reconstructed on the basis of holomorphology (reproduced as Fig. 4.1 on page 81).

He 'sets the stage' for his attempt in the first three chapters of the book which provide comparative information about the sperm of other arthropods. In Chapter 1 (25 pp.), Jamieson defines the phylum Uniramia, summarizes the structural, physiological, biochemical, embryological and fossil evidence for and against its existence as a monophyletic taxon, and also for arthropod polyphyly vs. monophyly. He concludes that the Uniramia does form a monophyletic lineage, albeit of problematic position, but that the issue of arthropod polyphyly or monophyly cannot be settled yet (however, the emphasis of his words about the latter topic will convince any reader that he is an ardent polyphyleticist).

This chapter also contains brief, but rich and fully illustrated summaries of chelicerate and crustacean sperm diversity (incredible) wherein he concludes that the ground plan spermatozoan for both taxa is an "aquasperm" (an aquatic cell generally associated with external fertilization and, like the 'tadpole' mentioned